

**UNITED STATES DISTRICT COURT  
EASTERN DISTRICT OF MISSOURI  
EASTERN DIVISION**

TIM MARSCH,	)	
	)	
Plaintiff,	)	
	)	
v.	)	No. 4:03-CV-1646 CAS
	)	
EXXON MOBIL CORPORATION, et al.,	)	
	)	
Defendants.	)	

**MEMORANDUM AND ORDER**

This is a Jones Act case in which plaintiff Tim Marsch alleges that he suffers from thrombocytopenia (low blood platelet count) as a result of his exposure to benzene in various petroleum products during his employment with defendant from 1978 through 2000. This matter is before the Court on defendant ExxonMobil Corporation's Daubert motion to exclude the testimony of plaintiff's expert witnesses. Plaintiff opposes the motion. For the following reasons, defendant's motion should be granted.

**Background.**

Defendant asserts that the proffered opinions of plaintiff's witnesses should be stricken because the opinions have no scientific basis, are not supported by the material facts of this case, are not supported by reliable scientific methodology or literature, have not been tested and have not been subjected to peer review, and are inadmissible under the Federal Rules of Evidence and as explained by the United States Supreme Court in Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579 (1993), and subsequent decisions of the federal courts.

Plaintiff opposes the motion, asserting that he has adequate evidence of his exposure to sufficient concentrations of benzene to cause blood disorders, and that his expert Dr. Eckardt, a

physician, has an adequate scientific basis under Daubert to express his opinion on the cause of plaintiff's thrombocytopenia. Plaintiff asserts that his expert Dr. Short, a pharmacologist and toxicologist, based his opinions about the effects of plaintiff's exposure to benzene on numerous publications from the World Health Organization, International Association for Research of Cancer, the Occupational Safety and Health Administration, and the Agency for Toxic Substances and Disease Registry. Finally, plaintiff responds that his expert Mr. Storms is an industrial hygienist and certified safety specialist whose testimony relates to topics other than the cause of plaintiff's thrombocytopenia, and therefore defendant's motion is moot with respect to Mr. Storms.

Neither party has requested an evidentiary hearing. The parties have submitted an extensive evidentiary record, which includes the expert reports of plaintiff's expert witnesses as well as those of defendant's experts, Dr. Blinder and Dr. Raabe, excerpts from the experts' depositions, some of plaintiff's medical records, several of plaintiff's Mobil Medical Department Reports, Mobil Material Safety Data Bulletins, and other documents produced by ExxonMobil which concern safety, training, and other precautions for its workers exposed to benzene. Accordingly, the Court finds that it can make a proper Daubert analysis without the need for an evidentiary hearing or oral argument.

**Legal Standard.**

As a threshold matter, plaintiff asserts that under the Jones Act, his burden is lessened on all issues, including causation, and that he need only prove a factual basis in the record from which a jury could infer, with reason, that his injuries were the result of on-the-job injuries, citing Sentilles v. Inter-Caribbean Shipping Corp., 361 U.S. 107, 109-10 (1959). Thus, plaintiff contends that toxic tort cases cited by defendant in support of its Daubert motion are inapplicable.

While plaintiff is correct that the burden of proof to establish causation under the Jones Act is lower than in a common law tort action, “the standards for determining the reliability and credibility of expert testimony are not altered merely because the burden of proof is relaxed.” Wills v. Amerada Hess Corp., 379 F.3d 32, 47 (2d Cir. 2004) (applying Daubert principles in Jones Act case), petition for cert. filed, 73 U.S.L.W. 3720 (U.S. May 31, 2005) (No. 04-1640). Decisions under the Federal Employers' Liability Act (FELA), 45 U.S.C. §§ 51-60, which has the same lower standard of causation as the Jones Act, apply to claims brought under the Jones Act. Ballard v. River Fleets, Inc., 149 F.3d 829, 831 n.3 (8th Cir. 1998). The Ninth Circuit held that the lower standard of causation under FELA and the standards for admission of expert testimony are distinct issues that do not affect one another, and stated the lower standard of causation does not “mean that in FELA cases courts must allow expert testimony that in other contexts would be inadmissible.” Claar v. Burlington Northern R. Co., 29 F.3d 499, 503 (9th Cir. 1994); see Taylor v. Consolidated Rail Corp., 114 F.3d 1189, 1997 WL 321142, \*7 (6th Cir. 1997) (unpublished table decision) (standard for admission of expert testimony in FELA cases is controlled by the Federal Rules of Evidence and Daubert and is not affected by the relaxed standard of proof in FELA cases). The Eighth Circuit has also applied the Daubert standard to admission of expert testimony in an FELA case. See Hose v. Chicago Northwestern Transp. Co., 70 F.3d 968 (8th Cir. 1995). Based on these authorities, the Court concludes that Daubert applies in the context of the Jones Act.

The admission of expert testimony in federal court is governed by Federal Rule of Evidence 702. Lauzon v. Senco Prods., Inc., 270 F.3d 681, 686 (8th Cir. 2001). “Rule 702 reflects an attempt to liberalize the rules governing the admission of expert testimony.” Weisgram v. Marley Co., 169 F.3d 514, 523 (8th Cir. 1999), aff'd, 528 U.S. 440 (2000). The Rule “favors admissibility if the

testimony will assist the trier of fact.” Clark v. Heidrick, 150 F.3d 912, 915 (8th Cir. 1998). Doubt regarding “whether an expert’s testimony will be useful should generally be resolved in favor of admissibility.” Id. (citation and internal quotation omitted).

In Daubert, the United States Supreme Court interpreted Rule 702 to require district courts to be certain that expert evidence based on scientific, technical or other specialized knowledge is “not only relevant, but reliable.” Daubert, 509 U.S. at 589. The district court must make a “preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts in issue.” Daubert at 592-93.

The Eighth Circuit has explained that proposed expert testimony must meet three criteria to be admissible under Rule 702:

First, evidence based on scientific, technical, or other specialized knowledge must be useful to the finder of fact in deciding the ultimate issue of fact. This is the basic rule of relevancy. Second, the proposed witness must be qualified to assist the finder of fact. Third, the proposed evidence must be reliable or trustworthy in an evidentiary sense, so that, if the finder of fact accepts it as true, it provides the assistance the finder of fact requires . . . .

The basis for the third prerequisite lies in the recent amendment of Rule 702, which adds the following language to the former rule: ‘(1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.’ Fed. R. Evid. 702.

Lauzon, 270 F.3d at 686 (internal citations and punctuation omitted).

The Daubert decision lists several nonexclusive factors a court may examine in performing its “gatekeeper” role of screening expert testimony for relevance and reliability. These are: “(1) whether the theory or technique can be (and has been) tested; (2) whether the theory or technique has been subjected to peer review and publication; (3) the known or potential rate of error; and (4)

whether the theory has been generally accepted.” Lauzon, 270 F.3d at 686-87 (internal citations and punctuation omitted). Additional factors which have been developed in subsequent cases include “whether the expertise was developed for litigation or naturally flowed from the expert’s research; whether the proposed expert ruled out other alternative explanations; and whether the proposed expert sufficiently connected the proposed testimony with the facts of the case.” Id. (citations omitted). The Daubert list of factors is not exclusive, and does not function as a definitive “checklist or test.” Daubert, 509 U.S. at 593-94. Instead, the trial court retains great flexibility in customizing the analysis to fit the facts of each case. See Jaurequi v. Carter Mfg. Co., Inc., 173 F.3d 1076, 1083 (8th Cir. 1999).

“Regardless of what factors are evaluated, the main inquiry is whether the proffered expert’s testimony is sufficiently reliable. See Unrein v. Timesavers, Inc., 394 F.3d 1008, 1011 (8th Cir. 2005) (‘[t]here is no single requirement for admissibility as long as the proffer indicates that the expert evidence is reliable and relevant’).” First Union Nat’l Bank v. Benham, No. 04-3656, 2005 WL 2206891, \*4, \_\_\_ F.3d \_\_\_ (8th Cir. Sept. 13, 2005).

### **Factual Background.**

Plaintiff Tim Marsch was previously employed by defendant ExxonMobil (formerly known as Mobil Oil Company) as a seaman aboard its vessels which transported petroleum products, including gasoline, unleaded gasoline, premium unleaded gasoline, MTBE and other products. From 1978 to 1988, plaintiff worked for defendant in the “Western Rivers” fleet transporting tanker barges on the inland rivers, primarily the Illinois and Mississippi Rivers. From 1988 through 2000, plaintiff worked for defendant and its subsidiary Sea River in the “East Coast” fleet operations primarily along

the New York and New Jersey coasts. Plaintiff sailed for defendant as a deckhand, a tankerman, an ordinary/able-bodied seaman, a marine pollution officer, and a mate.

As defendant's employee, plaintiff was exposed to various petroleum products in the course of his employment activities, primarily various types of gasoline (premium, regular, unleaded and leaded). Plaintiff was exposed to and breathed the fumes from these products mainly in the following ways: loading gasoline onto barges, including connecting and disconnecting hoses; topping off tanker barges, gauging gasoline levels, stripping and cleaning tanks that had transported gasoline, emptying gasoline from drip pans, and venting tanks with wind sails.

Plaintiff's exposures often lasted for an entire shift or watch on duty and were often repeated several times over the course of a thirty-day voyage. The products defendant transported in its tanker barges, particularly the gasolines, contained benzene. According to defendant's records and its Material Safety Data Sheets ("MSDS"), the benzene content of defendant's gasoline was usually between one and two percent (1-2%) by weight but could be as high as five percent (5%) by weight.

As early as 1977, defendant was aware of the potential health risks posed to its sailors from benzene exposure, particularly benzene released from ullage openings during the gasoline loading/topping off process.<sup>1</sup> On June 13, 1977, defendant issued a "Notice to Masters – Gasoline Loading – Topping Off – Benzene Caution" that all persons on deck near ullage openings during gasoline loading operations were required to wear organic vapor respiratory protection to prevent exposure to benzene. (Pl.'s Ex. 2). In November 1977, defendant acknowledged that all persons

---

<sup>1</sup>"Ullage" is defined as, "The amount that a cask of liquid lacks from being full." Black's Law Dictionary 1524 (7th Ed. 1999). The parties have not defined "ullage openings" in the context of this case.

within eighteen feet of the ullage opening during gasoline topping off operations must “wear prescribed gas mask protection.” (Pl.’s Ex. 3).

In 1992, after the Occupational Safety and Health Administration (“OSHA”) and the United States Coast Guard had reduced the Permissible Exposure Limit (“PEL”) of benzene to 1 part per million (ppm), defendant acknowledged the potential for excessive exposure of its marine transport workers to unacceptable levels of benzene in certain operations including cargo transfer operations involving connecting or disconnecting liquid or vapor hoses, cargo tank gauging and sampling, and cargo gas freeing, venting and cleaning. See Defendant’s “Notice to Masters – Benzene Exposure” (February 24, 1992). The Notice to Masters noted that (1) repeated or prolonged exposure to benzene even at relatively low concentrations may result in various blood disorders, ranging from anemia to leukemia; (2) since 1980, all U.S. fleet employees who in the course of their normal duties have potential exposure to gasoline/benzene vapors, are issued their own personal respirators; and (3) in compliance with Coast Guard regulations, chemical aprons, boots, goggles and gloves are required while connecting/disconnecting cargo hoses, draining drip pans or any activity associated with liquid cargo containing more than .05% benzene.

Defendant’s Respiratory Protective Program issued in 1992 directed that “[u]ntil monitoring indicates benzene levels below recommended permissive exposure limits, respirators must be worn by all personnel actively engaged in handling gasoline cargoes throughout the entire loading operation, when entering pump rooms, handling hoses or engaged in other activities where gasoline vapors may be present.”<sup>2</sup> (Pl.’s Ex. 14). This document also directed, “Respirators must also be

---

<sup>2</sup>The record indicates that no air monitoring or sampling was done of plaintiff’s work environment.

worn at all times during tank cleaning operations when cleaning tanks in which the previous cargo was gasoline.” (Id.)

While plaintiff worked on the Western Rivers fleet (1978 to 1988) he worked under multiple conditions which defendant recognized as “posing a benzene hazard” and which required respirator use for protection, as set forth in Attachment D to the 1992 Notice to Masters. Defendant also included plaintiff as one of the fifty employees in its “Benzene Surveillance Program,” knowing that his work exposed him to concentrations of benzene which defendant knew presented risks of serious harm. Nonetheless, defendant did not provide plaintiff with respiratory protective equipment to protect him from benzene exposure until the spring of 2000.

Benzene is an organic chemical which is toxic to human beings.<sup>3</sup> Benzene enters the body through inhalation, ingestion or dermal contact. Exposure to benzene is known to damage the human hematopoietic systems.<sup>4</sup> One of the known adverse consequences of human exposure to benzene is reduced blood platelets. Platelets are the cells of human blood necessary for the blood to clot normally. Reduction of blood platelets to an abnormally low level is “thrombocytopenia,” which is

---

<sup>3</sup>The United States Supreme Court has addressed the nature and characteristics of benzene:

Benzene is a familiar and important commodity. It is a colorless, aromatic liquid that evaporates rapidly under ordinary atmospheric conditions. Approximately 11 billion pounds of benzene were produced in the United States in 1976. Ninety-four percent of that total was produced by the petroleum and petrochemical industries, with the remainder produced by the steel industry as a byproduct of coking operations. Benzene is used in manufacturing a variety of products including motor fuels (which may contain as much as 2% benzene), solvents, detergents, pesticides, and other organic chemicals. 43 Fed. Reg. 5918 (1973).

The entire population of the United States is exposed to small quantities of benzene, ranging from a few parts per billion to 0.5 ppm, in the ambient air. . . . Over one million workers are subject to additional low-level exposures as a consequence of their employment. The majority of these employees work in gasoline service stations, benzene production (petroleum refineries and coking operations), chemical processing, benzene transportation, rubber manufacturing, and laboratory operations.

Benzene is a toxic substance. Although it could conceivably cause harm to a person who swallowed or touched it, the principal risk of harm comes from inhalation of benzene vapors. When these vapors are inhaled, the benzene diffuses through the lungs and is quickly absorbed into the blood. Exposure to high concentrations produces an almost immediate effect on the central nervous system. Inhalation of concentrations of 20,000 p.m. can be fatal within minutes; exposures in the range of 250 to 500 p.m. can cause vertigo, nausea, and other symptoms of mild poisoning. 43 Fed.Reg. 5921 (1978). Persistent exposures at levels above 25-40 p.m. may lead to blood deficiencies and diseases of the blood-forming organs, including aplastic anemia, which is generally fatal.

Industrial Union Dep’t, AFL-CIO v. American Petroleum Inst., 448 U.S. 607, 611 (1980).

<sup>4</sup>Hematopoietic is not defined in Stedman’s Medical Dictionary 797 (27th ed. 2000), but the synonym hemopoietic is provided. Hemopoietic is defined as “[p]ertaining to or related to the formation of blood cells.” Id., 805.

plaintiff's diagnosed condition. There are several types of thrombocytopenia. Defendant contends that plaintiff was diagnosed with idiopathic, otherwise known as immune, thrombocytopenia in August 2000, but plaintiff argues his thrombocytopenia is benzene-induced.

Plaintiff's blood platelet counts dropped while he was employed by defendant, from 268,000 in 1986 to 118,000 in 2000. Laboratory norms vary somewhat, but generally platelet counts from 140,000 to approximately 400,000 are considered normal. Plaintiff's platelet counts were within normal limits when first recorded in 1986 but deteriorated and became abnormal after that.

### **Discussion.**

Defendant asserts that plaintiff's expert causation testimony suffers from six major shortcomings, in that plaintiff's causation experts: (1) have no evidence specifically relating to the hypothesized relationship between hydrocarbon exposure attributable to Mobil and plaintiff's thrombocytopenia; (2) have no reliable evidence demonstrating that plaintiff was exposed to benzene or hydrocarbons attributable to Mobil in amounts sufficient to cause thrombocytopenia; (3) are unable to exclude other potential causes of plaintiff's thrombocytopenia; (4) improperly rely on an alleged temporal relationship between plaintiff's exposure to benzene or hydrocarbons attributable to Mobil and his thrombocytopenia; and (5) fail all of the Daubert factors. Finally, defendant asserts that plaintiff's causation testimony is independently inadmissible and unduly prejudicial under Rule 403, Fed. R. Evid.

#### **A. Dr. Eckardt's Testimony.**

Dr. John R. Eckardt, M. D., is plaintiff's treating physician and the Director of Clinical Research Program at the Department of Medicine, Division of Hematology/Oncology at St. John's Mercy Medical Center in St. Louis, Missouri. Dr. Eckardt began treating plaintiff in August 2000,

on referral from plaintiff's family physician. Dr. Eckardt's initial impression was that plaintiff had very mild thrombocytopenia which had developed very slowly over a fourteen-year period. (Pl.'s Ex.

6). Dr. Eckardt's initial impression and recommendations were:

The possible etiologies of this can include either decreased production or increased destruction, including a mild immune thrombocytopenia or it is possible that he may have some inhibition of his bone marrow secondary to toxins experienced at work. However, without a change in his red count or white count, I think this is less likely. I do think that evaluation is appropriate. The #1 thing to do is a bone marrow biopsy. This will show if there is a decrease or increased number of megakaryocytes going along with either increased destruction or decreased production. Doing a B12 and folate, sedimentation rate an ANA and rheumatoid factor along with a comprehensive metabolic panel and repeat CBC and platelets which to review the peripheral smear.

Pl.'s Ex. 1 at 3.

The bone marrow biopsy examiner concluded that plaintiff most likely had peripheral platelet destruction rather than a decreased production of platelets. His comments and conclusions about plaintiff's tests were as follows:

The patient is a 40-year-old man with slowly progressive mild peripheral thrombocytopenia over the last 4½ years. The patient's history is significant for occupational exposure to petroleum fumes for the last 8½ years. The peripheral blood smear shows mild leukocytosis and mild thrombocytopenia. The bone marrow biopsy is normocellular with slight megakaryocytic hyperplasia including some immature forms. The presence of marrow megakaryocytic hyperplasia with peripheral thrombocytopenia is most suggestive of peripheral platelet destruction.

Pl.'s Ex. 8. at 2.

Dr. Eckardt later said that the bone marrow biopsy "did not reveal a specific cause [for plaintiff's thrombocytopenia] except for a decreased number of platelets which seems to be due to a decreased production." (Pl.'s Ex. 7 at 1). Dr. Eckardt observed that plaintiff's platelet counts remained mildly low and "the only time his platelet count improved was when he did have time away from the exposures he has at his work place." Id. Plaintiff's liver and spleen scan and liver

ultrasound were negative or normal, although plaintiff initially had a mildly elevated liver function, which later went back to normal. (Eckardt Dep. at 12-13). Plaintiff's autoimmune tests—ANA, rheumatoid factor and sedimentation rate—were normal. (Id.) Plaintiff testified negative for hepatitis (id. at 37), and was not tested for HIV because plaintiff had no risk factors for HIV. Id. Dr. Eckardt testified that cigarette smoking is generally not a significant factor for affecting platelet count, id. at 38, but alcohol abuse can affect platelet count by “direct toxin to the bone marrow. It can inhibit the bone marrow in and of itself if enough alcohol is consumed. Second, it can affect the liver cirrhosis causing, then, enlargement of the spleen and a sequestration problem.” Id. at 38.

Defendant asserts that as outlined in his report, Dr. Eckardt's opinion does not rise to the level of reasonable scientific certainty required by Daubert. Defendant points to the following aspect of Dr. Eckardt's report:

Although I cannot definitively say that there is a specific exposure at work which is causing his thrombocytopenia, but because of the type of chemicals he is exposed to resulting in possible inhibition of the bone marrow and the pattern he has demonstrated, I feel very certain that there is something in his work environment which may be causing his thrombocytopenia.

Eckardt Report at 1.

A key issue in the case as briefed by the parties is whether plaintiff's thrombocytopenia results from the bone marrow's failure to produce enough platelets (as happens in leukemia) or from the body's destruction of platelets after they are produced. The distinction is crucial because defendant asserts there is no reliable evidence demonstrating that benzene or other hydrocarbon exposure is capable of causing thrombocytopenia by virtue of the destruction of platelets as opposed to by virtue of decreased production of platelets. In this case the only bone marrow test performed on plaintiff

showed that his thrombocytopenia was caused by peripheral destruction of platelets, not decreased production of platelets. Eckardt Dep. at 29-30.

Plaintiff asserts that Dr. Eckardt thought the bone marrow biopsy was compatible with toxic thrombocytopenia, based on this testimony:

Q. If in fact you have a hydrocarbon toxicity from exposure to petrochemicals, you would expect the impact on the bone marrow to be reducing the ability to produce platelets, isn't that true?

A. Yes, you would generally expect the toxin to inhibit the production of the marrow cells, the megakaryocytes, yes, as the most typical form. Though you can see normal and occasionally increased cellularity if the megakaryocytes in this case, or the white cells or red cells in other cases, are having a maturation problem and therefore, though the cells are there, they are just not producing them and making them go out to the periphery. Should I explain that?

Eckardt Dep. at 29.

Notwithstanding the result of the bone marrow test, Dr. Eckardt concluded that workplace exposure may be to blame for plaintiff's thrombocytopenia because of the alleged correlation between plaintiff's platelet counts and his work history. Eckardt Dep. at 44. Dr. Eckardt testified in deposition, however, that he is not certain whether plaintiff's thrombocytopenia is related to his exposure in the workplace:

Q. And it's your testimony this evening that in your opinion Mr. Marsch's thrombocytopenia may be related to his exposure in the workplace, and it may not be related to his exposure in the workplace, is that fair?

A. Yes, that is fair.

Eckardt Dep. at 44.

Dr. Eckardt's recommendation is that plaintiff reduce his workplace exposure because of the possibility that the alleged exposure may be causing his thrombocytopenia. Thus, defendant contends that Dr. Eckardt does not know whether workplace exposure is the cause:

A. [N]ot knowing exactly the cause of it, be it all the different possibilities we have discussed through the day, I have tried to go through the things that I could potentially eliminate or reasonably decrease, you know. That was where a lot of our discussions on his potential exposures were. What could be there, and if that could be a problem, and why in my medical opinion I'm just nervous about it. Because I just don't know.

Eckardt Dep. at 84.

Plaintiff counters that Dr. Eckardt gave consideration to plaintiff's medical history, the well-documented reduction of his platelet count over many years, the results of the blood and bone marrow testing he performed, which were able to rule out potential alternative causes of thrombocytopenia, as well as the temporal relationship Dr. Eckardt noted that when plaintiff was away from work for extended periods, his platelet count rose. Thus, plaintiff contends that Dr. Eckardt had an adequate scientific basis under Daubert to express his opinion on the cause of plaintiff's thrombocytopenia, based on the application of principles of differential diagnosis, and therefore his opinion satisfies Daubert's reliability requirement.

**B. Dr. Short's Testimony.**

Dr. Robert E. Short, Jr., Ph.D., is a pharmacologist and toxicologist. Dr. Short states in his report that thrombocytopenia is a known adverse effect associated with benzene exposure, and that benzene is a "likely agent responsible for Mr. Marsch's thrombocytopenia." Short Report at 1. Dr. Short offers the following information about the mechanism and toxicology of benzene:

After exposure to high levels of benzene in air, about half leaves the body in exhaled air the other half enters the bloodstream. Once in the bloodstream, benzene can be temporarily stored in the bone marrow and fat. Benzene is metabolized in the liver and bone marrow and some of the harmful effects of benzene are caused by these metabolites. Most of the metabolites of benzene leave the body in the urine within 48 hours after exposure.

. . . .

The detrimental effect on the blood-forming system of prolonged exposure to small quantities of benzene vapor is of extreme importance. The hematopoietic system is the chief target for benzene's toxic effects, which are manifested by alternations in the level of formed elements in the peripheral blood. These effects have occurred at concentrations of benzene that may not cause irritation of mucous membranes, or any unpleasant sensory effects.

Clinical evidence of leucopenia, anemia, and thrombocytopenia, singly or in combination, has been frequently reported among the first signs. Bone marrow may appear normal, aplastic, or hyperplastic, and may not, in all situations, correlate with peripheral blood forming tissues. Because of variations in the susceptibility to benzene morbidity, there is no "typical" blood picture. The onset of effects of prolonged benzene exposure may be delayed for many months or years after the actual exposure has ceased and identification or correlation with benzene exposure must be sought out in the occupational history.

Pl.'s Ex. 9 ("Hazards Assessment for Benzene").

With respect to plaintiff, Dr. Short opined that "benzene is a likely agent responsible for Mr. Marsch's thrombocytopenia," and stated more fully:

Thrombocytopenia is a known adverse effect associated with benzene exposure. As cited in the attached document [Pl.'s Ex. 9], the International Agency for Research on Cancer, which is part of the World Health Organization, concluded in 1982 that human exposure to benzene resulted in a variety of hematological effects, including thrombocytopenia. Therefore, benzene is a likely agent responsible for Mr. Marsch's thrombocytopenia.

. . . .

In summary, since benzene exposure is associated with thrombocytopenia in humans, I believe that it is a likely agent responsible for Mr. Marsch's condition. Since limited efforts appear to have been taken by his employer to minimize exposure to products containing benzene, Mr. Marsch was probably exposed to sufficient levels of benzene to produce thrombocytopenia.

Short Report, Pl.'s Ex. 10 at 1.

Plaintiff states that Dr. Short consulted and relied upon publications on benzene from the Agency for Toxic Substances and Disease Registry, the World Health Organization, OSHA, the U.S. Coast Guard, and the International Association for Research of Cancer (IARC). Dr. Short also

consulted and relied upon the text Principles of Toxicology, by Casarett and Doull, and his own more than thirty years of experience.

Defendant observes that Dr. Short admits there is no evidence demonstrating that plaintiff was exposed to harmful levels of benzene, quoting from his expert report: “Since there is no actual exposure information for Mr. Marsch, I cannot estimate doses of benzene that he might have received. Furthermore, I cannot tell if his exposures were within limits judged safe by OSHA.” Short Report at 1. Defendant asserts that Dr. Short assumes plaintiff’s potential benzene exposure, coupled with the fact that benzene is capable of causing some types of thrombocytopenia, means that benzene caused plaintiff’s thrombocytopenia. Defendant states that Dr. Short reached these opinions after spending approximately fifteen hours reviewing information obtained from the Internet and from plaintiff’s counsel. Short Dep. at 14. Defendant also asserts that Dr. Short ascertained that plaintiff was exposed to benzene even though Dr. Eckardt was unable to say what particular workplace exposure may be responsible for plaintiff’s thrombocytopenia. Id. at 53.

### **C. Mr. Storms’ Testimony.**

Mr. Kenneth Storms is an industrial hygienist and certified safety specialist. Although Mr. Storms stated in his deposition that he is not qualified to testify as to medical causation in an individual, Storms Dep. at 33, defendant asserts that some of his opinions relate to causation in a general sense. Specifically, Mr. Storms stated in his report that he believes plaintiff was exposed to benzene while handling gasoline cargoes, and that there was “significant potential for over exposure and that exposure monitoring should have been conducted to quantify the exposure.” Storms Report at 5.

Plaintiff states that Mr. Storms' testimony relates to topics other than the cause of plaintiff's thrombocytopenia, such as industry's long-standing knowledge of the toxicity of benzene, applicable standards, appropriate industrial hygiene practices, air monitoring, respiratory protection programs, and respirators. Plaintiff states that because Mr. Storms did not offer an opinion concerning the cause of plaintiff's thrombocytopenia, defendant's Daubert motion is moot with respect to this witness.

**D. Daubert Analysis.**

The first part of the Daubert analysis concerns whether the challenged testimony is reliable. To be reliable, the subject of the testimony must be "scientific . . . knowledge." Daubert, 509 U.S. at 590. "This requirement implies that the testimony must be grounded in the methods and procedures of science and must be more than unsupported speculation or subjective belief." Curtis v. M&S Petroleum, Inc., 174 F.3d 661, 668 (5th Cir. 1999) (citing Daubert, 509 U.S. at 590).

A plaintiff in a toxic tort case must prove that he was exposed to and injured by a harmful substance manufactured by the defendant. Wright v. Willamette Indus., Inc., 91 F.3d 1105, 1106 (8th Cir. 1996) (applying Arkansas law). "Scientific knowledge of the harmful level of exposure to a chemical, plus knowledge that plaintiff was exposed to such quantities, are minimal facts necessary to sustain the plaintiff's burden in a toxic tort case." Allen v. Pennsylvania Eng'g Corp., 102 F.3d 194, 199 (5th Cir. 1996); see Wright, 91 F.3d at 1106 (plaintiff must establish "the levels of exposure that are hazardous to human beings generally as well as the plaintiff's actual level of exposure to the defendant's toxic substance before he or she may recover.") (applying Arkansas law). A plaintiff must prove the "level of the exposure using techniques subject to objective, independent validation in the scientific community." Mitchell v. Gencorp Inc., 165 F.3d 778, 781 (10th Cir. 1999) (citing Allen and Wright). "At a minimum, the expert testimony should include a description of the method

used to arrive at the level of exposure and scientific data supporting the determination. The expert's assurance that the methodology and supporting data is reliable will not suffice." Id.

Absent supporting scientific data, a scientific expert's estimates and conclusions are little more than guesswork. Mitchell, id. "Guesses, even if educated, are insufficient to prove the level of exposure in a toxic tort case." Id. The Fifth Circuit has held that the law does not require a plaintiff to show the precise level of benzene to which he was exposed, but a causation opinion must be based on sufficient information concerning the level of benzene to which the plaintiff was exposed, or the methodology is not reliable and the causation opinion is inadmissible. Curtis, 174 F.3d at 671.

In this case, the Court finds that the causation opinions of plaintiff's expert witnesses are fatally flawed because they do not provide a scientific basis for establishing the level of plaintiff's exposure to benzene. None of plaintiff's experts even attempt to quantify the level of plaintiff's exposure. As a result, their methodology is not reliable and their opinions as to causation are inadmissible.

Plaintiff attempts to rely on various Mobil documents, including its Material Safety Data Sheets and the various Notices, particularly those requiring respirator use, to establish his degree of exposure to benzene, but these cannot overcome his experts' testimony that they have no evidence of overexposure. See Mitchell v. Gencorp, 165 F.3d at 781 (expert could not testify as to level of exposure based on material safety data sheets and photographs of room with chemical spillage). Under Daubert, "any step that renders the analysis unreliable . . . renders the expert's testimony inadmissible. This is true whether the step completely changes a reliable methodology or merely misapplies that methodology." In re Paoli R.R. Yard PCB Litig., 35 F.3d 717, 745 (3d Cir. 1994).

In this case, plaintiff's experts are unable to say exactly what plaintiff was exposed to, much less what quantities he was exposed to.

As quoted above, Dr. Eckardt, plaintiff's treating physician, testified he cannot say with certainty that a specific exposure at plaintiff's work caused his thrombocytopenia, and he made no attempt to quantify plaintiff's level of exposure:

Although I cannot definitively say that there is a specific exposure at work which is causing his thrombocytopenia, but because of the type of chemicals he is exposed to resulting in possible inhibition of the bone marrow and the pattern he has demonstrated, I feel very certain that there is something in his work environment which may be causing his thrombocytopenia.

Eckardt Report at 1. Similarly, Dr. Eckardt testified in deposition that he was not sure plaintiff's work exposure was related to his thrombocytopenia:

Q. And it's your testimony this evening that in your opinion Mr. Marsch's thrombocytopenia may be related to his exposure in the workplace, and it may not be related to his exposure in the workplace, is that fair?

A. Yes, that is fair.

Eckardt Dep. at 44.

Dr. Eckardt testified that he recommended plaintiff reduce his workplace exposure because of the possibility the alleged exposure could be causing the thrombocytopenia, although Dr. Eckardt specifically stated he does not know whether workplace exposure is the cause:

A. [N]ot knowing exactly the cause of it, be it all the different possibilities we have discussed through the day, I have tried to go through the things that I could potentially eliminate or reasonably decrease, you know. That was where a lot of our discussions on his potential exposures were. What could be there, and if that could be a problem, and why in my medical opinion I'm just nervous about it. Because I just don't know.

Eckardt Dep. at 84.

From the foregoing, it is clear that Dr. Eckardt's testimony does not rise to the level of reasonable scientific certainty required by Daubert.

The testimony of plaintiff's pharmacologist/toxicologist expert, Dr. Short, also cannot establish causation in this case. Dr. Short's report states there is no evidence demonstrating that plaintiff was exposed to harmful levels of benzene: "Since there is no actual exposure information for Mr. Marsch, I cannot estimate doses of benzene that he might have received." Short Report at 1. Dr. Short also testified that he did not know exactly what plaintiff had been exposed to:

Q. Not only can you not tell us the level of the exposure; you can't tell us what he was being exposed to, if anything, during the time each of these [platelet] counts was taken?

A. Correct.

Short Dep. at 27.

Dr. Short did not conduct any calculations relating to plaintiff's potential benzene exposure. Short Dep. at 37. As a result, Dr. Short cannot testify if plaintiff's potential exposure was above acceptable levels:

Q. Isn't it true, sir, that since you do not know what his exposures were, it's impossible for you to calculate a time-[weighted] average?

A. I would say I don't know what his exposures were, so I cannot tell you if they were above or below acceptable levels.

Short Dep. at 40. Dr. Short testified that absent any evidence of exposure to benzene in excess of the permissible exposure limit ("PEL"), he could not attribute thrombocytopenia to that exposure:

Q. As long as the exposure to benzene from any source is less than the PEL, you would not attribute the thrombocytopenia to that exposure, would you?

A. Yes. Correct.

Short Dep. at 48.

Dr. Short's reliance on plaintiff's counsel's description of plaintiff's work activities in the absence of actual exposure data to conclude that plaintiff "might have had significant exposure to benzene" and "was exposed to sufficient levels of benzene to produce thrombocytopenia," Short Report at 1, is mere guesswork. Therefore, Dr. Short's opinion that plaintiff's thrombocytopenia was caused by exposure to excessive amounts of benzene is unreliable and inadmissible.

Similarly, Mr. Storms testified that he had no idea what plaintiff's level of exposure to benzene was: "I can't make any presumption at this point what his exposure was." Storms Dep. at 35. Therefore, Mr. Storms' conclusions that plaintiff was exposed to benzene and had "significant potential for over exposure" are unreliable and inadmissible.

Plaintiff cites Bonner v. ISP Technologies, Inc., 259 F.3d 924, 931 (8th Cir. 2001), for the proposition that he need not quantify exposure as long as there is reliable evidence that the exposure "exceeded safe standards." Pl.'s Opp. at 8. The Court agrees with plaintiff's proposition as a general statement, but as discussed above, his experts do not provide any reliable evidence that his exposure exceeded safe standards. In contrast, in Curtis v. M&S Petroleum, 174 F.3d 661, the Fifth Circuit concluded the district court erred in excluding the plaintiff refinery workers' expert witness who testified that the plaintiffs' exposure to excessive amounts of benzene (200-300 p.m.) by inhalation and through skin contact had caused numerous health problems. The district court excluded the testimony as unreliable because it did not demonstrate with sufficient certainty the amount of benzene to which the plaintiffs were exposed.

In Curtis, the plaintiffs were exposed to Heavy Aromatic Distillate ("HAD"), which contains a number of toxic and hazardous chemicals, the most prevalent being benzene, which makes up 25-35

percent of HAD. The expert relied on Material Safety Data Sheets and the OSHA standard on benzene (both of which showed that the hazardous effects of inhaling benzene and of skin contact with benzene were consistent with the symptoms experienced by the plaintiffs), a toxicological profile for benzene published by the U.S. Department of Health and Human Services, which contained “all of the knowledge as of 1995 from the standpoint of epidemiological studies and toxicological animal studies regarding the toxicity of benzene and its adverse health effects,” and the Supreme Court’s Industrial Union decision, in which the Court discussed several studies regarding the hazardous effects of benzene and the exposure levels at which these effects occur. (See footnote 3, *supra*). Curtis, 174 F.3d at 671.

Specifically, the expert testified that the refinery workers in Curtis were exposed to levels of benzene that were several hundred times above the permissible exposure level of 1 ppm. Id. He relied upon several key facts in reaching this conclusion. First, he found the symptoms experienced by the workers to be extremely important: the cluster of symptoms the workers began experiencing shortly after HAD was introduced into the refinery--headache, nausea, disorientation, and fatigue--are well-known symptoms of overexposure to benzene. The expert concluded these symptoms were all indications of exposure to benzene levels of at least 200-300 ppm. Id. Second, the expert relied on the results of Draeger tube tests performed by the refinery workers, which were designed to measure a maximum of 10 ppm. of benzene based on twenty pumps.<sup>5</sup> Because the tubes were only pumped twice before becoming saturated, measuring the maximum of 10 ppm., he calculated that the refinery workers were exposed to at least 100 ppm. Id. Third, the expert relied upon the work practices at the refinery, in which workers were required to clean strainers and oily water separators and gauge

---

<sup>5</sup>Draeger tubes are pump devices used to monitor benzene levels in the air. Curtis, 174 F.3d at 666.

the tanks on a daily basis, all of which made exposure to high levels of benzene likely, particularly where the workers testified they often became soaked in HAD when performing this work. Curtis, 174 F.3d at 671. Finally, the expert relied on the design of the refinery itself. He testified it had been designed to process crude oil, which contained only traces of benzene, and not highly toxic chemicals such as HAD which contained large amounts of benzene, and that because of the way specific equipment was designed (such as storage tanks with floating roofs which vented directly to the atmosphere), workers were exposed to excessive levels of benzene when the refinery attempted to process HAD. Id. at 672.

The Fifth Circuit found this evidence amply supported the expert's finding that the refinery workers were exposed to benzene at levels several hundred times the permissible exposure level of 1 ppm. Id. Significantly, the testimony of plaintiffs' expert witness was properly excluded as to the refinery workers' wives, who claimed they began to experience symptoms similar to those of their husbands after being exposed to their husbands' skin and clothes. The expert did not reach a conclusion as to the level of benzene to which the wives were exposed, and therefore the Fifth Circuit held his causation opinion as to the wives was unreliable and inadmissible. Id. at 671 n.9.

The testimony of plaintiff's experts in this case is similar to the expert's testimony with respect to the wives in Curtis. Because plaintiff's experts did not attempt to reach a conclusion as to the level of benzene to which he was exposed, and offer no facts on which to base such a conclusion, their causation opinions are unreliable and inadmissible. The fact that defendant's Material Safety Data Sheets and various Mobil Notices indicate plaintiff was working around benzene and should have been provided a respirator cannot serve to establish plaintiff's level of exposure to the degree required for reasonable scientific certainty under Daubert. Cf. Mitchell, 165 F.3d at 781 (industrial hygienist's

testimony on causation properly excluded where he could not establish plaintiff's level of exposure to leaking barrels of chemicals in an enclosed room; expert's review of Material Safety Data Sheets and plaintiff's testimony concerning the number and length of visits he made to the room were not subject to objective, independent validation and were "little more than guesswork.").

Plaintiff attempts to rely on temporal proximity to establish causation, based on Dr. Eckardt's conclusion that when plaintiff was away from work, his platelet counts increased. In some instances, "a strong temporal connection is powerful evidence of causation." Bonner, 259 F.3d at 931 (expert opinion as to causation admissible where based in part on temporal connection between plaintiff's sudden, one-time exposure to toxic chemical and onset of symptoms). Unlike Bonner, there is insufficient evidence of a strong temporal connection in this case to establish causation. Dr. Eckardt testified that he did not have plaintiff's work records to correlate elevations or reductions in plaintiff's platelet counts, but rather only had:

at times some verbal information from [plaintiff] on when he was and when he was not at work that trended [sic] to suggest that there were higher counts when he was away from the ships and lower counts when he was on them. Those are the verbal records from him in terms of his work record with the hard documents of the platelet count. But it is verbal records of when he is working and when he was not.

Eckardt Dep. at 59. Plaintiff has not submitted his work records, affidavits or other evidence to provide a direct correlation between his platelet count test results and his working on board defendant's ships. The Court finds the evidence of temporal proximity provided by Dr. Eckardt's testimony is insufficient to establish reliability under Daubert.

The Court also concludes that plaintiff's experts' testimony fails several of the Daubert factors. The record lacks evidence showing how the experts' conclusions may be tested. The

experts' opinions have not been published and subjected to peer review. Finally, there is no evidence the methodology presented by plaintiffs' experts is generally accepted within the scientific community.

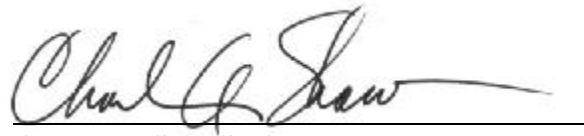
"Under the regime of Daubert . . . a district judge asked to admit scientific evidence must determine whether the evidence is genuinely scientific, as distinct from being unscientific speculation offered by a genuine scientist." Rosen v. Ciba-Geigy Corp., 78 F.3d 316, 318 (7th Cir.) (internal quotation omitted), cert. denied, 519 U.S. 819 (1996). Plaintiff's experts appear to be "genuine scientists." The analytical gap in their testimony, however, is too broad for the testimony to be admitted under Daubert and Rule 702.

**Conclusion.**

"The only question relevant to the admissibility of . . . scientific evidence is whether it is sufficiently reliable and relevant to assist the jury's determination of a disputed issue." Bonner, 259 F.3d at 929 (citing Daubert, 509 U.S. at 594-95). The Court concludes that the proffered testimony of Dr. Eckardt, Dr. Short and Mr. Storms does not meet this standard, for the reasons discussed herein. Defendant's motion to exclude the testimony of these witnesses should therefore be granted.

Accordingly,

**IT IS HEREBY ORDERED** that defendant ExxonMobil Corporation's motion to exclude the testimony of plaintiff's expert witnesses Dr. Eckardt, Dr. Short and Kenneth Storms is **GRANTED**. [Doc. 45]

  
**CHARLES A. SHAW**  
**UNITED STATES DISTRICT JUDGE**

Dated this 15th day of September, 2005.